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Review

Healthcare Related Factors Affecting the Management of HIV infected patients: A Systematic Review of Qualitative Evidence

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Review

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Abstract: The human immunodeficiency virus (HIV) infection is a major health concern that is associated with high mortality and socioeconomic burden on both patients and healthcare authorities. This systematic review aimed to qualitatively explore the healthcare related factors influencing the management of HIV in adult patients. Seven online databases (PubMed, Embase, Google Scholar, CINAHL, PsycInfo, PsycExtra and International Pharmaceutical Abstract) were searched. Articles published in English language between September 2000 and September 2018 were eligible for inclusion. Quality assessment tool developed by the EPPI-centre was used to assess the quality of the included studies. A cross-case thematic analysis was conducted using NVivo 10. A total of 30 studies were included in the review. The qualitative analysis identified four major themes influencing the management of HIV: awareness of healthcare professionals, attitudes of healthcare professionals, lack of healthcare infrastructure and stigma associated with HIV. The findings of this review suggest that patients infected with HIV are at an increased risk of experiencing poor disease management due to various healthcare-related factors. Healthcare professionals and policy makers should acknowledge the presence of these factors with the aim of providing quality care to patients with HIV.

Keywords: HIV; healthcare; qualitative; management

INTRODUCTION

The human immunodeficiency virus (HIV) infection is a major health concern that is associated with high mortality and socioeconomic burden on both patients and healthcare authorities across the world. In 2018, World Health Organization (WHO) reported the highest prevalence of HIV in Africa with 25.7 million people living with HIV.¹ Furthermore, the African region accounts for around two thirds of the total new HIV infections worldwide.¹ The 2018 Joint United Nations Programme on HIV (UNAIDS) report suggested that there were 37.9 million [32.7 million–44.0 million] people living with HIV.²

The increased global prevalence of HIV has led to an expanded use of antiretroviral therapy (ART) which is the mainstay of HIV disease management in the absence of any curative interventions. Since 2000, the estimated number of people receiving ART has doubled every three to four years due to the availability of affordable ART.³ In 2018, an estimated 23.3 million HIV patients were receiving ART worldwide. However, despite the increased availability of ART, there is limited access to antiretroviral drugs (ARVs) particularly by children and adolescents with only 54% reported to have received ARVs by the end of 2018.¹ Furthermore, the effectiveness of ART and the Pre-exposure prophylaxis (PrEP) treatment used in the management of HIV is dependent on optimal medicine adherence to achieve maximum viral suppression.⁴ A meta-analysis involving 84 studies reported that only 62% of patients with HIV achieved optimal adherence to ART.⁵ In developed countries such as Canada, drug and alcohol abuse, homelessness and sex work are some of the factors that are associated with suboptimal adherence.⁶ Furthermore, patient-related factors including young age, female gender, low levels of education and comorbid psychiatric conditions may also negatively influence the level of adherence to ART.⁷ This is not the case with low-income and middle-income countries, where in addition to these social factors, poverty, poor access to medications and health systems are some of the barriers to optimal medicine adherence.⁸

In addition to improving the medicine adherence in HIV patients, it is equally paramount to consider other factors that might influence the management of HIV patients. For example, a systematic

review that included 42 studies conducted in 12 countries identified transport costs and distance, stigma and fear of disclosure, staff shortages, long waiting times and fear of drug side effects as some of the barriers to effective ART care.⁹ Similarly, evidence from a Dutch study suggests that patients with HIV reported negative experiences with healthcare professionals (HCPs) including their unpleasant attitude, breach of patient confidentiality, poor support and delayed treatment.¹⁰ Another study reported lack of flexibility in clinic opening hours as a barrier to accessing treatment by patients.¹¹

Therefore, this review aims to systematically explore the healthcare related factors affecting the management of HIV from both patients and HCPs' perspectives.

METHODS

This review was conducted in accordance with the recommendation of Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA).¹²

Search strategy

A systematic literature search was conducted using seven electronic databases: PubMed, Embase, Google Scholar, CINAHL, PsycInfo, PsycExtra and International Pharmaceutical Abstract. The databases were searched for relevant studies published between September 2000 and September 2018. In addition, the reference lists of retrieved articles were inspected manually in order to identify further eligible studies. The search terms used included "qualitative research", "HIV", "health care professionals", "health care workers" and "factors". Boolean operators (OR, AND, NOT) were used to identify available evidence as follows: "HIV" OR "AIDS" OR "Human immunodeficiency Virus" AND "healthcare professionals" OR "providers" OR "specialists" AND "perspectives" OR "attitude" OR "factors" AND "disease management" OR "disease control" OR "condition control".

Inclusion and exclusion criteria

Qualitative studies published in English language that explored healthcare-related factors influencing the management of HIV from both patients and HCPs' perspectives were eligible for

inclusion. Studies focusing on diseases other than HIV were excluded. Studies assessing patients' or carers' knowledge about the disease were also excluded as they were beyond the scope of this review.

Data extraction and analysis

Data extraction was carried out by one reviewer (AA) and was independently verified by a second reviewer (AH). Any differences were resolved by the involvement of a third reviewer (EC). Items extracted from the qualitative studies included author's name, study type, study setting, sample size, study aims and method(s) of analysis (Table 1).

Qualitative analysis was conducted via Nvivo 10 using the thematic synthesis technique reported by Thomas and Harden.¹³ All included studies were thoroughly read, and the extracted research interpretations, explanations and descriptions were coded to generate themes and sub-themes. To determine how the generated codes related to the final themes, cross-case thematic analysis approach was used to inductively develop categories from the initial themes and concepts identified in the included studies. Subsequently, the emerged categories were revised and merged to identify the major themes.

Quality Assessment

The quality of the included studies was assessed by the quality assessment criteria developed by EPPI-Centre.¹⁴ Two researchers (AA, AH) independently applied the eight item criteria to all included studies. For each of the included studies, a grade of A to D was awarded based on the quality assessment criteria: Grade A – No or few flaws; B – Some flaws; C – Significant flaws which may affect the validity of the findings and D – Untrustworthy findings/conclusions (Table 1). Studies were not excluded based on the results of the quality assessment, yet caution was taken when interpreting their results.

RESULTS

The initial search in the databases yielded 977 studies. 554 studies were removed at the title level. 423 were screened at abstract level. Of these 311 studies were excluded after the removal of duplicates and application of inclusion/exclusion criteria. The remaining 112 studies were thoroughly reviewed and further 82 studies were removed. 30 studies met the inclusion criteria and were included for data extraction (Figure 1).

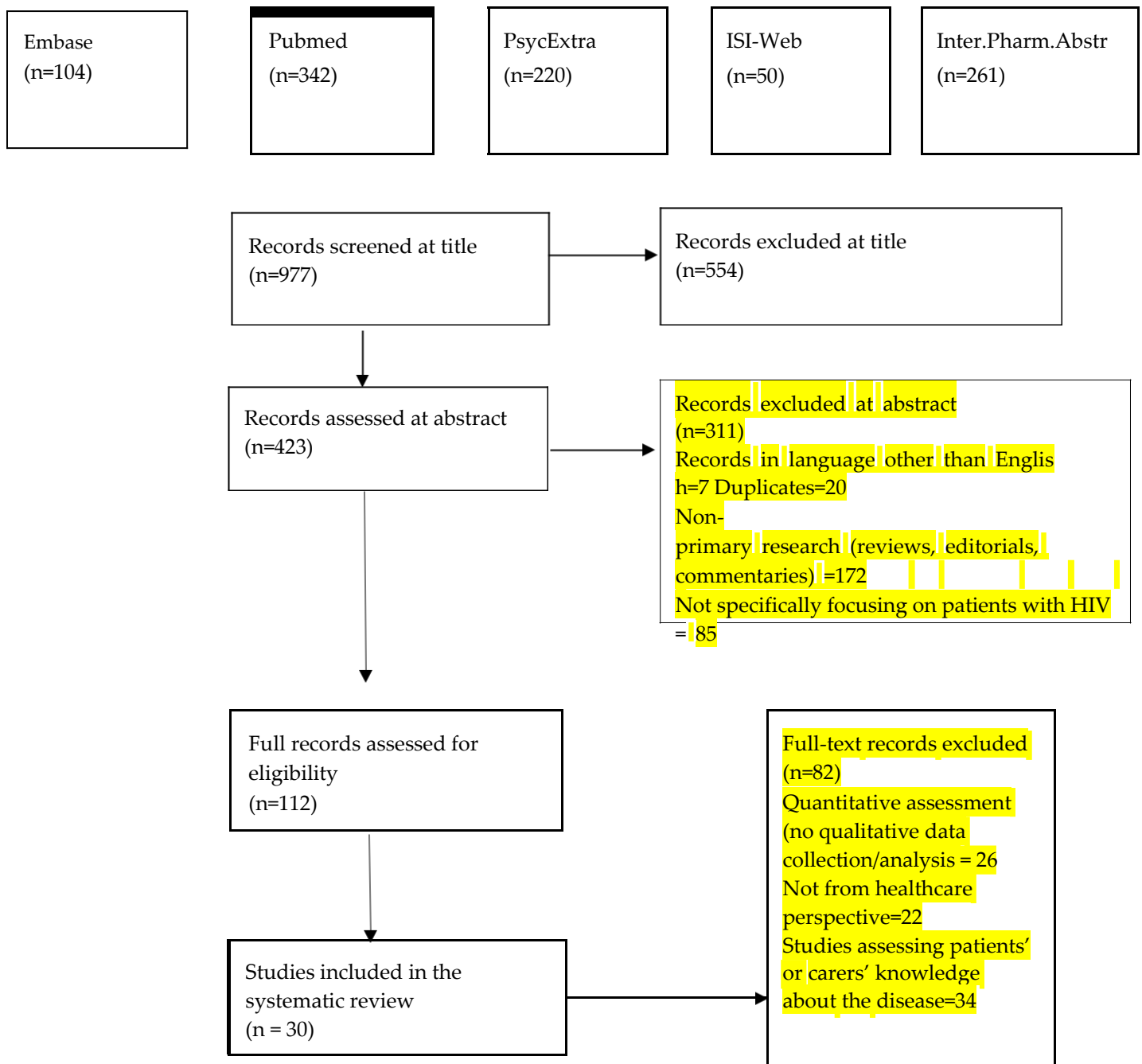


Figure 1. Data extraction flow diagram.

Of the 30 included studies, seven were conducted in the developed world with five in the United States,^{17,28,39,40,42} one in Canada³⁶ and one in Europe (multiple countries).¹⁶ The US studies employed qualitative semi-structured or in-depth interviews while the Canadian and European studies involved a qualitative interview and focus group discussion respectively. The study settings were patients' homes, healthcare centers and HIV clinics/facilities. The sample size ranged between 9 and 593.

The remaining 23 studies were conducted in the developing world with four in South Africa, ^{23,30,35,44} three each in Kenya,^{19-20,24} and Brazil,^{22,37,41} two each in Ethiopia,^{27,43} West Africa (Burkina Faso, the Democratic Republic of Congo, Ghana, Madagascar, Malawi and Togo)^{18,33} India^{21,29} and China,^{26,31} followed by one each in Sudan,¹⁵ Mozambique,³² Uganda,²⁵ Kingdom of Lesotho³⁴ and Iran.³⁸ All of these studies used the qualitative approach and employed either semi-structured interviews, in-depth interviews and/or focus groups. The study settings were varied and included hospitals, healthcare centers, clinics and prisons. The sample size ranged between 7 and 303 (see table 1 for characteristics of included studies). A total of four themes emerged from the studies: three from HCP perspectives and one from patients' perspective. Themes emerging from studies were found to be consistent across the studies and there were no significant differences across thematic areas between patients and HCPs. Themes extracted from HCPs were: Awareness of HCPs, attitudes of HCPs and lack of healthcare infrastructure. Theme extracted from patients' views was the Stigma associated with HIV. (Table 2).

Table 1. Characteristics of included studies.

Study	Settings	Sample size	Study design	Study aim	Methods of analysis	Quality assessment
Studies conducted in the developed world (n=7)						
Nostlinger et al. (2008)	15 study sites in 13 European countries	254 participants	Focus group discussions	Assess differences in perceptions between service providers and people living with HIV on sexual and reproductive health related problems	Hermeneutic analysis, and descriptive content analysis	A
McNeil et al. (2014)	Residential HIV/AIDS care facility, Canada	13 patients	Semi-structured interview	Explore how the integration of comprehensive harm reduction services into this setting shapes access to and engagement with care	Thematic analysis	C
Parish et al. (2015)	HIV primary medical care clinics, United States.	44 patients	Semi-structured interviews	The barriers and facilitators of obtaining dental care in a sample of HIV-infected adults	Thematic content analysis	B
Pereyra et al. (2011).	Five HIV primary care clinics, United States	593 patients	Face-to-face baseline interviews	Investigated the use of dental care services among a population of low income persons living with HIV/AIDS	Multivariate logistic regression analysis	C
Coll et al. (2015)	Public and private hospitals, United States	14 HIV care providers	Structured qualitative interviews.	Explored knowledge, attitudes, and practices among health-care providers regarding preconception counselling, safer conception and pregnancy among HIV-infected women	QRS Nvivo9 qualitative data analysis software	B

Sherman D. (2000)	Medical centre, New York, United States	12 nurses	In-depth interviews	Explored the perceptions and experiences of nurses who have chosen to work on an AIDS- dedicated unit	Thematic analysis	B
Carr et al. (2004)	Patients home, United States	9 patients	In-depth interviews and observation-participation	Explore the multidimensional effect of stigma on women's efforts to promote, maintain, and enhance their health	Data analysis was concurrent with data collection	B
Studies conducted in the developing world (n=23)						
De Wet et al. (2012)	Public health- care clinics, South Africa	147 nurses	Group interviews	Present a typology of contradictory contextual factors in the antiretroviral programme	Thematic analysis	A
Guin S. (2009)	Central prisons, India	10 patients	Face-to-face in-depth unstructured interviews.	Gain insight into the state of health care services for HIV-positive prison inmates in India	Thematic analysis	C
Chomat et al. (2009)	University Hospital, India	43 patients	In-depth qualitative interviews	Determine the knowledge, attitudes, and treatment practices of HIV-infected individuals and their health care providers	Grounded theory analysis	A

Hesketh et al. (2005)	Brothel, China	84 sex workers	Semi-structured interviews	Explore factors which may increase the potential for FSWs to act as vectors for HIV transmission	cross-tabulations, Chi-Squared	A
Jaientilal et al. (2015)	Health centres, Mozambique	31 healthcare providers	In-depth interviews	Focuses on the acceptability and feasibility of a positive prevention intervention in HIV clinics from the healthcare provider perspective	Content analysis	B
Jenniskens et al. (2012)	Health facilities and communities, Five West African countries (Burkina Faso, the Democratic Republic of Congo, Ghana, Madagascar and Malawi)	303 patients	Semi-structured interviews, focus group discussions	Explore how various stakeholders understand health priorities, how priorities are established in practice, their relationship with resource allocation, and perceptions of the funding of HIV and AIDS in relation to other health priorities.	Preliminary analysis	A
Koto et al. (2016)	Healthcare facilities, Kingdom of Lesotho	10 patients	Focus group discussions and in-depth interviews	Explores the difficulties facing healthcare workers in Lesotho	Content analysis	C
Li et al. (2014)	Centre for Disease Prevention and Control, China	31 patients	In-depth interviews	Explored barriers to accessing HIV/AIDS-related services from the perspective of newly diagnosed HIV-positive men who have sex with men	Thematic content analysis	B
Machine et al. (2010)	Training institution, Sudan	68 patients	Group interviews for	Identify important variations in meanings, values, opinions, behaviors, and explanations for cultural or	Within- and between-case analysis	A

				physical phenomena associated with the stigma of HIV/AIDS		
Mataboge et al. (2016)	Primary healthcare settings, South Africa	33 participants (23 patients and 10 healthcare workers)	phenomenological design	Explore and describe the experiences of both the reproductive health services' clients and the healthcare providers with regard to the provision of reproductive health services	Content thematic analysis	B
Mesquita et al. (2013)	Sexually Transmitted Disease Specialized Care Service, Brazil	4 health workers	Semi-structured interviews	Determine the work of the multidisciplinary healthcare team when providing integral care to adolescents living with HIV/AIDS	Content analysis	D
Moore et al. (2003)	Homes or offices of respondents, Lome, Togo, West Africa	30 professional caregivers	Face-to-face interviews	Explore the impacts of cultural, institutional and socio-economic factors in the fight against HIV/AIDS	Not mentioned	B
Moradi et al. (2015)	The Centre for Communicable Disease Control, Iran	Not mentioned	Semi-structured interviews, Focus Group Discussions	Evaluate the relationship between reproductive health and HIV/AIDS services at policy-making level in Islamic Republic of Iran	Thematic analysis	C
Mutemwa et al. (2013)	Health facilities providing integrated HIV and reproductive health services, Kenya	32 professionals	Semi-structured in-depth interviews	Explore provider experiences with integration in order to ascertain their significance to the performance of integrated health facilities	Combination of both thematic and inductive free-coding qualitative data analysis	B
Opollo et al. (2015)	Primary healthcare setting, Kisumu district, Kenya	76 healthcare workers	Open-ended questionnaire	Explore perceived and experienced HIV stigma among HIV-infected healthcare workers in a rural area of Kenya	Thematic analysis	B

		infected by the disease				
Porto et al. (2016)	Maternity hospitals for pregnant women with HIV/ AIDS, Brazil	12 women health professionals	Semi-structured interview	Examine the adoption of HIV/AIDS prevention measures and practices by women health professionals	Grounded theory analysis	B
Porto Tet al. (2014)	Two public maternity hospitals, Brazil	12 women/professionals	Semi-structured interviews	Know the meanings attributed by female health professionals to the process of caring for women with HIV	Grounded theory analysis	B
Rujumba et al. (2010)	Healthcare facilities, Uganda	60 health workers	Semi-structured interviews, focus group discussions	Explore the challenges of providing HIV counselling and testing services to children	Content thematic analysis	B
Alemie G. (2012)	University Hospital, Ethiopia	7 healthcare workers	Open ended questionnaire	Examine the perceptions of healthcare workers on work place transmission of HIV and its effects on healthcare	Thematic analysis	C
West et al. (2015)	Primary care clinic, Johannesburg, South Africa	9 health care providers 42 patients	In-depth interviews & focus group discussions	Assess 2011 guidelines implementation gaps and facilitators and barriers to delivering safer conception services	Grounded theory analysis	B
Yakob et al. (2016)	Primary care clinics, Ethiopia	111 participants	In-depth interviews & focus group discussions	Investigate the impact of socio-ecological factors on access to and acceptability of HIV/AIDS treatment and care services	Content data analysis	A
Yeap et al. (2010)	Private-sector community-based clinics, South Africa	45 caregivers and staff	Face-to-face in-depth interviews	Describe barriers and facilitators of uptake of HIV care among children	Thematic analysis	B

Evans et al. (2011)	Health care facilities, Kenya	25 nurses	Focus group discussions, in- depth interviews	Investigate key challenges in provider- initiated testing and counselling from a nursing perspective and explore ways in which the principle of the 3Cs (consent, confidentiality and counselling) was being managed in everyday practice.	Thematic analysis B
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Table 2. Themes and sub-themes emerging from the study.

Attitudes of healthcare professionals ¹⁵⁻¹⁶	Lack of respect for patients with HIV/AIDS
	Lack of acceptance among healthcare professionals
	Unprofessionalism among healthcare workers
Awareness of healthcare professionals ¹⁷	Lack of quality training among healthcare professionals
	Lack of formal training for counselling
	Limited awareness and knowledge among healthcare providers
Lack of healthcare infrastructure ^{15, 18-21}	Structural barriers such as time constraints, supply chain logistics issue and lack of transportation
	Insufficient staff members
Stigma associated with HIV ^{24, 26}	Discrimination by healthcare professionals towards patients with HIV
	Isolation of HIV-infected patients in the society

Attitudes of healthcare professionals

The attitudes of healthcare professionals affecting the management of HIV included lack of motivation to treat patients, unprofessionalism, disrespect to patients and putting blame on patients.¹⁵⁻¹⁶ It suggests that there is conglomerate of negative attitudes amongst healthcare professionals towards patients with HIV. Study involving professionals in Sudan suggested that adverse attitudes play a key role in manifesting the behavioral intention of professionals involved in the management of the condition of their patients.¹⁵ Such views of professionals also impact on patients' beliefs about the disease that consequently discourage them from seeking proper medical treatment:

"In some communities, once they know you have tested positive, immediately they start mourning you: "Now we are going to lose you." . . . That will make the person feel uncomfortable, and this is what makes some people commit suicide".

Study exploring the differences in perceptions on sexual and reproductive health between service providers and patients infected with HIV, suggested that service providers were either not trained enough or were not concerned about issues related to sexual and reproductive health.¹⁶ Some healthcare providers cited lack of time for not discussing these issues with their patients during their routine visit to the clinic.

Awareness of healthcare professionals

There was limited awareness and understanding among healthcare professionals about HIV. Healthcare professionals attributed their lack of awareness to lack of quality training about patient counseling. Study that assessed the knowledge of healthcare providers about preconception counseling and safer conception for HIV-infected females reported limited level of knowledge regarding preconception counseling and safer conception:¹⁷

"I think we are not familiar with it [addressing safer conception for HIV-positive patients] and it is not something that we really hear a lot about. It is not a main discussion with HIV patients because we discuss trying to protect the partner".

Some healthcare providers acknowledged the provision of limited counseling to HIV-infected pregnant patients:

"Unfortunately, from what I see in practice patterns, patients who are HIV positive who become pregnant don't really receive much counseling on it before they are pregnant. They get plenty of counseling and education once they become pregnant about how to avoid vertical transmission and how to deliver a healthy baby and keep themselves healthy. The counseling they get before pregnancy, I would say, is small or nonexistent".

Lack of healthcare Infrastructure

Lack of healthcare infrastructure was associated with structural barriers including time constraints, lack of healthcare facilities, supply chain issues including lack of transportation and inadequate staff members.^{15,18-21} Study exploring the perceptions of Kenyan nurses identified

overcrowded patient wards and lack of adequate healthcare facilities as a barrier to maintaining dignity and patient confidentiality:¹⁹

"We don't have cubicles ... so it forces us to go bed by bed as we give a report ... patients have come to realize the language we use and then you say "this immuno-suppressed patient and it just gives away the whole story to the others".

"Like, when we remove the blood then it is taken to another facility for testing ... then ... in most cases it is the relatives who bring the results back and some of the relatives know about the CD4 count and why it is done, so we actually breach confidentiality".

Likewise, another study exploring the experiences of healthcare professionals about HIV and reproductive health in Kenya²⁰ reported poor financial remuneration, high levels of psychological stress due to heavy workload and limited time with patients:

"[Laughing] Oh my God! I'm not satisfied! You realize that the salary you are getting, although we say that nursing is a calling, at times you may not even (meet) your needs".

"Sometimes you meet extreme cases that really leave you crushed...not able to cope. Sometimes the situation (you are dealing with is so severe) you ask yourself how that could happen to a human being..."

Healthcare providers highlighted flaws in logistics and infrastructure at the operational level including lack of medical equipment and medical supplies:

"The challenge there is like when she gets here and she is told that these drugs are not there and yet out there they are told that HIV drugs are free, so (sometimes you) feel for them... they will think that we are (lying to) them."

Furthermore, study exploring the quality of health services provided to HIV-infected patients in Indian prisons reported lack of basic medical facilities and appropriate medications for HIV treatment:²¹

"Inmates are referred to the civil hospital only when their health condition deteriorates. It is only when one HIV-positive inmate becomes sick due to some opportunistic infection like TB or if someone's CD4 count

becomes lower, then only one is sent to the civil hospital for the antiretroviral therapy treatment. There is no treatment for HIV-positive inmates inside the prison. Even for simple blood tests and other check-ups, inmates have to be referred to the civil hospital”.

Stigma associated with HIV

Stigma associated with the disease included discrimination by healthcare professionals and isolation of HIV-infected patients in the society.^{24, 26} The Kenyan study conducted to determine the extent of HIV associated Stigma among healthcare workers attributed lack of knowledge to some of the public misconceptions about HIV:²⁴

“... these health workers they should not be assumed that they know ... I have been a health worker for 13 years now. I never valued about HIV testing. I never got anybody telling me about HIV testing ... I was never promiscuous. You see now I made my children, they are all positive. They are living with HIV and are taking drugs”.

Similarly, Chinese study that explored the barriers to accessing HIV related services by newly diagnosed HIV-positive patients reported discrimination by healthcare providers:

“I just went through the gate, she (a CDC staff member) immediately asked me to wear a mask, and she herself also wore a mask and gloves. I felt rejected, feeling a bit scared.”

Furthermore, the diagnosis of HIV in some patients barred them from accessing general healthcare services:

“In our local hospitals, I did not tell the doctors I had this disease (HIV). But when they checked for STIs, they also checked for HIV. After they screened for HIV, they refused to provide me treatment. They are the local big hospitals. But they said the disinfection measures in their hospitals were not comprehensive and did not treat me. I called the local CDC and asked for help. They negotiated with hospitals for about one to two weeks, but they failed. They told me that it depended on the hospitals. If they wouldn’t provide me treatment, they could not help. ”

DISCUSSION

To the authors' knowledge, this is the first systematic review that qualitatively explores the healthcare related factors influencing the management of HIV from both patients' and healthcare professionals' perspectives. The findings of this review suggest that provision of quality care to HIV patients relies on improving the awareness and attitudes of healthcare professionals towards HIV along with enhancing the existing healthcare facilities.

The review identified stigma as one of the major themes influencing the management of HIV. Stigma was conceptualized in two dimensions including discrimination from healthcare professionals and isolation of HIV-infected patients in the society. Patients with HIV often reported negative experiences with their healthcare professionals involving judgmental behaviour, poor and delayed treatment and breach of patient confidentiality. Healthcare professionals physically avoided patients, warned colleagues to take precautions when dealing with HIV patients and in some instances discouraged patients from accessing medical treatment regimen.²⁶ The misconceptions held by healthcare professionals about HIV could be explained by their lack of knowledge and awareness about the disease.⁴⁵⁻⁴⁶ These findings suggest that either improved or direct education for health care providers may remove some of their misconceptions about the disease and help in forging relationship based on trust and esteem between HIV patients and their healthcare providers. Previous evidence suggests that the acknowledgment of patients' socioeconomic factors by healthcare professionals including poverty, stress and patients' fear about their disclosure of disease can improve their attitude towards the patients and remove the stigma associated with the disease.⁴⁷

In addition to improving the understanding of healthcare professionals about the disease, enhancing the current healthcare infrastructure is equally important in improving the management of HIV. Some of the issues associated with the HIV healthcare services identified in this review included availability of effective ART; defining services at different levels of healthcare and coordination of healthcare services. These findings are consistent with the findings of a recent

systematic review that investigated the facilitators of and barriers to integration of health care for HIV and other long-term conditions.⁴⁸ The recent recommendation of WHO asking for every HIV-infected patient to receive ART⁴ has further highlighted the need to improve the efficiency of existing HIV-specific healthcare facilities. An ideal healthcare infrastructure would tackle the issue of policies that restrict ART supply and develop a programme that would identify infected patients, assess their disease stage and monitor their response to treatment. Delivery of HIV related services to affected patients at different levels of healthcare could be ensured by employing specially trained HIV staff who could provide consultations to primary care providers regarding condition management and disease monitoring. Furthermore, the primary care teams could be trained on how to conduct well-defined tasks such as provision of patient counselling, advice on self-management of the disease and adherence to drug therapy.⁴ Provision of HIV-specific counselling services at multiple healthcare levels would allow more people to receive essential preventive counselling.

All themes identified in this review can be grouped together and integrated within one model known as Behavioural Integrated Model.⁴⁹ For example, this model considers both knowledge and attitude to influence the behaviour of participants about a certain aspect of disease management. As evident from the findings of this review, patients often reported humiliation and indiscrimination from their service providers which significantly reduced their motivation to seek further HIV treatment. The adoption of integrated model by healthcare professionals and policy makers can help them to identify the reasons behind the failure of HIV treatment and rectify those reasons. If the failure of treatment was related to stigma associated with the limited awareness of service providers and members of the general public, focus should be on improving their knowledge in order to remove some of their misconceptions.

Researchers can also use this model to develop a theoretical base in a certain context and test their hypotheses in future studies.

This review has some limitations. The review did not include studies published in languages other than English that could have led to exclusion of valuable and relevant data. The review only

included qualitative studies which perceive knowledge, beliefs and attitudes according to the researchers own understanding instead of perceiving it in an objective way. Furthermore, the investigator's presence during data collection, which is often inevitable in qualitative research, can influence the participants' responses. The quality of research relies heavily on the skills of the individual researcher and different researchers can therefore differ in their perception about a certain issue that can introduce researcher bias. Such subjective and individual interpretation of the data suggests that findings generated from the qualitative studies cannot be generalised to the wider population or build a theoretical base through which hypothesis can be tested. Additionally, the cross-sectional study design employed by the included studies indicate that researchers are exploring participants' attitude and awareness at one point in time that can change with the passage of time. Nevertheless, it is important to highlight that a considerable number of studies included in this review adopted a mixed method approach (focus groups and interviews) that increased the validity and reliability of the research findings.

CONCLUSIONS

Patients infected with HIV particularly in the developing countries are at an increased risk of experiencing poor disease management due to multiple healthcare-related factors. The aforementioned factors include limited knowledge and understanding of healthcare professionals about HIV, inadequate HIV-related infrastructure and resources and stigma associated with the disease. These findings have important implications for healthcare professionals and policy makers. It highlights the significance of providing education and training to healthcare professionals with the aim of removing some of their misconceptions about HIV. Such education should also incorporate patient empathy and their right to be treated with respect and dignity in order to forge relationship based on trust and esteem between HIV patients and their healthcare providers. Furthermore, acknowledgment of patients' socioeconomic factors including poverty, stress and patients' fear about their disclosure of disease by healthcare professionals can help improve their attitude towards patients. In additions to improving the understanding of healthcare professionals

about HIV, policymakers should remove the flaws in logistics and healthcare infrastructure at the operational level to improve the management of HIV.

AUTHOR CONTRIBUTIONS

Author AH developed the research question and analyzed the data. Author AA conducted the searches and extracted the data. Author EC contributed to the preparation of the manuscript.

CONFLICT OF INTERESTS

None.

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